Nova Scotia

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ANNUAL REPORT

for the fiscal year ending March 31, 1991

Department of Fisheries

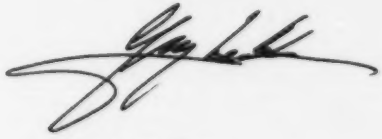
92-04730/

To His Honour
The Honourable Lloyd R. Crouse, P.C.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the twenty-seventh annual report of the Department of Fisheries, for the fiscal year ending March 31, 1991.

Respectfully submitted,



Guy J. Le Blanc
Minister of Fisheries

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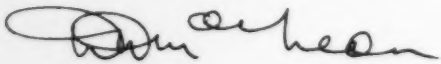

D.A. MacLean
Deputy Minister

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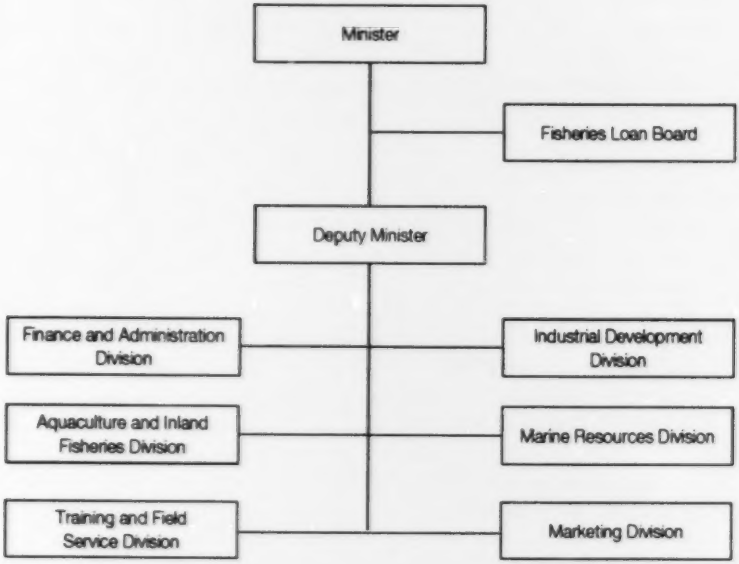
ORGANIZATIONAL CHART
DEPARTMENT OF FISHERIES



THE FISHING INDUSTRY

Fishermen in the province landed 493,661 metric tons of fish, shellfish, and marine plants in 1990, a slight increase over the 1989 catch of 491,711 metric tons. The landed value of all species also increased slightly in 1990, to $444.8 million from $438.4 million in 1989.

In 1990, lobster, again, was the most valuable species, worth $134.6 million to fishermen. Cod was the second most valuable, at $87.3 million, while scallops generated nearly $72 million.

From 1989 to 1990, the groundfish and shellfish sectors posted decreases in landings of 7.3 per cent and 5.3 per cent respectively. However, landings for pelagics increased by 30.8 per cent, to 126,429 metric tons in 1990 from 96,647 metric tons in 1989.

FISHERIES LOAN BOARD

During the fiscal year 1990–91, the number of applications received and loans approved decreased mainly because of decreases in quotas, the scarcity of fish, and limitations imposed by the federal Department of Fisheries and Oceans on the size (cubic number) of replacement boats.

Ten board meetings were held during the year. Of the 245 applications received, 136 were approved, 59 were rejected, and 50 were returned for various reasons. Three loans already in existence were assumed by other applicants.

Gross value of approved loans equalled $9,417,387. After down payments were deducted, net loans amounted to $7,399,212. There were 125 loans paid off during the year.

The following table compares loan board activity over the past five years:

Year Ending March 31	Applications Received	Loans Approved	Net Amount Approved	Number of Loans Outstanding	Amount Outstanding
1987	237	105	$ 5,670,410	1,555	$62,450,835
1988	362	216	16,863,941	1,454	59,520,867
1989	378	222	16,829,212	1,337	62,833,952
1990	312	153	10,602,707	1,313	61,590,761
1991	245	136	7,399,212	1,307	57,146,002

In addition to the outstanding loans, totalling $57,146,002 at year-end, there were outstanding commitments totalling $895,386. Advances during the year amounted to $8,853,288. Repayments on principal amounted to $11,805,223, and a further $5,671,140 was received as payment of interest. Write-offs amounted to $35,640.

With respect to delinquent accounts, there were 261 loans in arrears in the principal amount of $1,776,814 as of March 31, 1991. This represents 20 per cent of the loans and 3 per cent of the outstanding principal and is a slight increase over the previous year.

A breakdown of the types of loans approved during the fiscal year is as follows:

	Number of Loans	Amount of Loans
New boats to 40'	35	$ 2,731,754.75
New boats 40'–44'	19	1,521,731.20
New boats 44'–45'	2	464,600.00
New boats 45'–65'	2	614,000.00
Used boats to 40'	11	244,040.00
Used boats 40'- [illegible]	6	486,700.46
Used boats 45' [illegible]	5	1,548,000.00
Diesel engines	36	557,768.32
Gas engines	1	4,064.00
Equipment	14	127,022.20
Upgrading	3	98,788.20
Aquaculture	2	10,742.47
Total	**138**	**$7,399,211.60**

Loans approved, by county, were as follows:

	Number of Loans	Amount of Loans
Annapolis	3	723,700.00
Antigonish	5	128,300.00
Cape Breton	8	179,184.00
Cumberland	4	105,600.00
Digby	8	184,945.60
Guysborough	3	78,320.00
Halifax	14	766,285.13
Inverness	5	48,414.50
Lunenburg	9	336,884.55
Pictou	13	349,362.40
Queens	1	11,217.60
Richmond	7	167,275.76
Shelburne	25	1,788,693.44
Victoria	5	88,776.80
Yarmouth	26	2,442,251.82
Total	**138**	**$7,399,211.60**

During the year, 17 loans were cancelled, amounting to $974,088.

TECHNICAL AND INSPECTION SERVICES

Technical and inspection services are provided during the construction of boats financed under the loan board. During the 1990–91 fiscal year, vessel inspectors conducted 183 progress inspections on 85 boats. At the end of the fiscal year, 12 of these boats were at various stages of construction and subject to further inspection. Inspections were also conducted on 60 used boats. A total of 64 boats were inspected for engine, equipment, and upgrading loans, while 663 vessels underwent maintenance and housekeeping inspections. Seventeen miscellaneous inspections, which included surveys or appraisals for sales, were also carried out. Three sea trials were held, and seven new builders were added to the board's list of approved builders.

TRAINING AND FIELD SERVICE

TRAINING

There continues to be a strong demand for courses in net and gear technology, engineering, navigation, and safety. The demand for the programs comes from both the inshore and offshore fleets. The programs for the offshore fleets comprise mostly navigation and engineering courses that prepare candidates to write for Transport Canada Certification at Fishing Master Class I and II levels and Engineer Class III. Although the inshore fleet is not currently required to hold transport certification, there is considerable interest in the safety and navigation training programs that lead to Fishing Master Class III and IV certificates.

The training programs were conducted at the Nova Scotia School of Fisheries, Pictou, and in 76 locations throughout the province.

The volume of contract training increased considerably during the year, with the department obtaining major contracts with the Canadian International Development Agency (CIDA) and the Department of Fisheries and Oceans (DFO). The programs associated with contract work were held at Nova Scotia Fisheries, as well as in Yarmouth, Shelburne, Digby, Sydney, St. Lucia, Antigua, St. Kitts, and Nevis.

Traditional funding arrangements with the Canada Employment and Immigration Commission (CEIC) have been changing, and over the next three years the commission will eliminate funding for institutions. At the same time, the CEIC will shift its funding emphasis to Regional Industrial Training Committees (RITC), which identify training needs and purchase training from agencies best equipped to deliver it.

Nova Scotia School of Fisheries—Offshore Fleet

The programs offered at the Nova Scotia School of Fisheries, Pictou, are designed primarily to meet the needs of the province's offshore fleet. These courses are funded partially through the CEIC. The school also serves the needs of the local area and offers custom-designed programs for clients from other government agencies.

Training Programs—Offshore Fleet

Course	Number Held	Students Completed
Fishing Master Class I	4	40
Marine Emergency Duties (MED)	4	40
Radio Telephone	4	40
Engineer Class III	1	6

Extension Programs in Fishing Communities

The extension programs are designed primarily to meet the training requirements of the inshore harvesting sector. The department's representatives and Canada Manpower officials help plan and co-ordinate these programs in the fishing communities. Partial funding for the courses at the school and for the extension programs is provided through CEIC training funds.

A strong emphasis has been and continues to be placed on safety programs, which include:

- First Aid
- Fire Fighting
- Life Saving and Survival
- Use of Survival Suits and Life Rafts
- Distress Signals

The following communities were served with training programs in 1990–91:

Annapolis Royal
Bay St. Lawrence
Barrington
Canning
Canso
Cape George
Clarks Harbour
Chéticamp
Dayspring
Dingwall
Englishtown
Glace Bay
Ingonish
Louisbourg
New Waterford
North Sydney
Oyster Pond
Pleasant Bay

Port Bickerton
Port Dufferin
Pubnico
St. Francis Harbour
Shelburne
Sherbrooke
Tor Bay
Wallace
Yarmouth

The breakdown of the training programs conducted in these fishing communities is as follows:

Course	Number Held	Students Completed
Fishing Master Class III	4	48
Fishing Master Class IV	12	144
F/M Class IV—Phase I Loran "C"	6	72
Inshore Fishing Operations	5	60
Marine Emergency Duties	12	144
Small Business Management	5	54
Deckhand/Trawlerman	3	39
Radio Telephone	12	144
First Aid	12	144
Energy Conservation	14	168

Contract Training

The department entered into training contracts with the Department of Fisheries and Oceans, Regional Industrial Training Committees, and the Canadian International Development Agency.

Department of Fisheries and Oceans—Port Monitors

A major contract to train 145 port monitors commenced in December 1990.

The training program was designed in consultation with DFO officials to prepare 125 participants for positions as port monitors and 20 as operation-room personnel. The programs were held in Digby, Yarmouth, Shelburne, and Sydney. The courses were conducted by

provincial Fisheries staff and DFO officials. The courses given were as follows:

- Radio Telephone
- Chartwork
- Marine Emergency Duties
- Weight and Measures
- First Aid
- Wharves Plant
- Communication Skills
- Supervisory Skills
- Knowledge of Fleet
- Computer Literacy
- Legal Aspects

Regional Industrial Training Committees

Contracts were undertaken with the RITC in Yarmouth and on the Eastern Shore.

Yarmouth: Quality Management Programs (QMP) were held in Yarmouth and Pubnico. A total of 36 students attended the two courses.

Eastern Shore: A four-week aquaculture training program was held at Charlotte Lake, Halifax County, and provided a group of eight shellfish growers from the Eastern Shore with practical information on how to improve their operations.

Canadian International Development Agency

Programs were custom designed for 25 students from Antigua, Dominica, Montserrat, and St. Lucia.

Courses were held in the following:

- Gill Net Construction and Repair
- Longlining
- Outboard Engine—Maintenance and Repair
- Small Boat Safety and Navigation
- Record Keeping
- Fisheries Co-operatives
- Train-the-Trainer

A summary of the services offered by the division is as follows:

Services	Inshore	Offshore	Processing
Navigation	Small Craft Master Fishing Master Class IV	Fishing Master I Fishing Master II Fishing Master III	
Engineering	Small Gas & Diesel Diesel Engines Hydraulics	Watchkeeping Engineer Fishing Vessel Chief Engineer Engineer Class IV	Refrigeration for: Small Plant Operator Assistant to Plant Engineer
Fishing Gear Technology	Basic Skills in Repair and Construction Advanced Construction and Maintenance	Deckhand Trawlerman	
Safety	Marine Emergency Duties A2 Fire Fighting Life Saving, Survival First Aid	Marine Emergency Duties B1 & B2 Life Saving, Survival First Aid	
Small Business Management	Family Business Record Keeping Taxation Financial Decision-making		Small Plant Operator Record Keeping Finance Management
Quality	Included in Fishing Gear Program	Included in Trawlerman Course	Production Staff
Advisory Services	Fishing Gear and Engineering	Design of Special Programs	Design of Special Programs
Contract Training	Courses designed and implemented to meet client needs		

FIELD SERVICE

The Fisheries representatives serve fishing communities and the fishing industry throughout the province by providing information and monitoring government programs in the areas of industrial development, loan board, aquaculture, marketing, and training.

Training programs for Nova Scotia fishermen at the School of Fisheries, Pictou, and in fishing communities throughout the province

were co-ordinated by the Field Service and Administration staff. The Field Service Division worked in consultation with Transport Canada and the Canada Employment and Immigration Commission in processing documents related to training and in arranging instruction facilities. The division also played a major role in the selection of students.

Applications to the Industrial Development Division for assistance, described elsewhere in this report, were taken by the Fisheries representatives and rated according to impact and priority in the industry. The representatives handled several hundred applications and monitored progress on approved projects.

The Field Service completed confidential reports on loan applications for the Fisheries Loan Board. Fishermen were assisted in finding boat builders or used boats. Representatives also provided another significant financial advice and additional loan information. As well, fishermen were also encouraged to bring their loans up to date.

Increased emphasis was placed on aquaculture. Both finfish and shellfish rearing are expected to receive more attention in the future as the Aquaculture Act and Regulations are promoted and enforced.

The Fisheries representatives continued to assist the fishing industry by advising on the wide range of programs and services offered by the Department of Fisheries and Oceans. In addition, the representatives are involved with Transport Canada on navigational aids and fishermen's certification papers, the Canada Employment and Immigration Commission on training registration and student selection, and the federal Department of Communications on radio licences. They also deal with the provincial Department of Environment on dump sites and the Department of Lands and Forests on land use.

A key responsibility of all Fisheries representatives is to inform fishermen and processors in their respective regions about the various government regulations, programs, and services. In carrying out this function, Fisheries representatives attend meetings of fishermen's groups and deal with fishermen on an individual basis.

MARINE RESOURCES

The Marine Resources Division represents the department and the Nova Scotia fishing industry on numerous government-industry advisory committees. Its function is to ensure that the needs of the industry are adequately considered in the development and implementation of management plans for the various fisheries in which provincial fishermen participate.

This year, the division was represented on more than 70 advisory committees, dealing with groundfish, pelagics, crustaceans, and marine plants. The division served in an advisory capacity on many Fisheries bilateral-agreement discussions with foreign nations, as well as on committees concerned with foreign overfishing.

The division also represented the department on special committees and at meetings and reviewed proposals for oil and gas development and other projects that may have an impact on fisheries. As well, the division continued to participate in the Working Group for the Gulf of Maine Council on the Marine Environment. The ministers of Fisheries and Environment are the council members for Nova Scotia.

RESOURCE MANAGEMENT AND RESEARCH

The Resource Management and Research section of the division is divided into four units, each dealing with a species group: groundfish, invertebrates, pelagic fishes, and marine plants. A marine advisor heads each unit and is responsible for providing expertise concerning management of the resource. The marine advisors for the invertebrate and pelagic species are also involved in research programs aimed at investigating species and stocks of specific interest to Nova Scotia. These studies are important for improving fisheries management and for developing future fisheries. The programs involve considerable field work, in which students are employed. These studies are described in the following.

Invertebrates

In 1990, the division participated in programs designed to collect information on lobster and crabs in fishing ports around the province. Biological data on size frequencies, catch effort, and reproductive

potentials were gathered to assess the fisheries and to project how they may be developed.

Division staff focused on Lobster Area 26 (formerly District 7bI.), initiating a program aimed at increasing the lobster size. The legal size of lobster in Inverness County was increased from 2.5 to 2.75 inches (63.5 to 70 mm). This change is expected to enhance the yield from the local fishery and potentially increase recruitment. Throughout the years, the department has encouraged and supported fishermen by providing new lobster measures and assessing the impact of such changes on the lobster fishery. The division continued to work with the Department of Fisheries and Oceans (DFO) on lobster-tagging studies to assess the growth and movement of lobster in the experimental area.

Marine Plants

The department increased its management efforts of marine plant harvesting in the province during 1990–91, issuing two new rockweed licences and reviewing existing licences.

The division commissioned a study to evaluate the biomass and commercial value of the rockweed resource in the counties of Shelburne, Yarmouth, Digby, and Annapolis. The findings of the published report supplemented some of the research efforts of the DFO. The division also met with DFO officials to draft a Canada–Nova Scotia Memorandum of Understanding on Rockweed Management and Development.

Towards the end of the year, the department began taking steps to close the south side of the Annapolis Basin to the harvesting of rockweed due to overharvesting in the area. This marks the first time such a closure has been seriously considered.

Pelagic Fishes

Departmental studies on the gaspereau stock in the Pictou Harbour region have provided biological information on the effects of habitat alteration on gaspereau production.

In 1990, the gaspereau population was assessed using data on the composition of the species, size, and age frequency and on the movement of spawning fish into the Middle River Reservoir. The largest gaspereau fishery in Nova Scotia is on the Southwest Margaree River.

Lake Ainslie is the site for spawning and larval fish development. Larval fish surveys were conducted to estimate the size of the spawning stock and to forecast recruitment into the fishery. Staff also assessed the production of gaspereau larvae in relation to other organisms and to the physical aspects of the environment.

Groundfish

As part of the department's ongoing efforts to develop fisheries for underutilized fish species, preliminary biological work was done on hagfish. Data was collected on size, reproduction, and distribution.

A groundfish-sampling program was also conducted in Cape Breton to assess size-frequency of cod and hake taken by longline, gill net, and danish seine.

AQUACULTURE AND INLAND FISHERIES

This division is responsible for the planning, implementation, and administration of policies and programs aimed at conserving and enhancing the fisheries resource where land and water meet. The following are its major responsibilities:

1) Administration of the Aquaculture Act and Regulations, under which aquaculture licences and leases are issued. The division also administers the Federal-Provincial Agreement on Aquaculture Development, which provides for the co-ordination of departmental responsibilities and programs for the orderly development of aquaculture in the province. A Federal-Provincial Industry Sector Committee, composed of representatives from all regions, species culture sectors, and the Aquaculture Association of Nova Scotia, assists the two levels of government by providing advice and by developing a long-term development plan for the province's aquaculture research sector.

2) Management of the recreational trout fishery. This includes producing and distributing thousands of trout to several hundred rural and urban lakes across the province, conducting lake and stream surveys, creel censi, and other field and extension work that supports the conservation and enhancement of the recreational trout fishery.

3) Providing departmental advice and technical expertise to provincial and federal agencies, intergovernmental committees, and the public involved in the management of the resource base in the coastal zone.

4) Directing and conducting applied research and development projects that support aquaculture development. These initiatives are carried out through the Canada–Nova Scotia Co-operation Agreement on Fisheries Development.

5) Providing extension services to the public in the aquaculture and inland fisheries resource sectors through resource material, demonstration sites, on-site project evaluations, and public seminars and workshops.

The divisional headquarters are maintained at the Nova Scotia School of Fisheries, Pictou, while the aquaculture co-ordinator, together

with the licensing and leasing administration staff, is based in Halifax. Regional operational facilities include an experimental shellfish hatchery and culture demonstration site at Ship Harbour, Halifax County, and trout production facilities at Frasers Mills, Antigonish County, and McGowan Lake, Queens County.

AQUACULTURE

Leases and Licenses

This section is responsible for issuing aquaculture leases and licences in the province. It provides a "one-stop" service to aquaculture applicants; that is, it deals with other provincial and federal departments involved in the processing of applications.

During 1990–91, the division received 59 applications for aquaculture leases, licences, and experimental permits. Of these, 30 were for shellfish production and 29 for finfish production. Initial water-quality analyses were conducted in 15 areas.

The division also provides field and extension support to applicants requesting aquaculture licences and leases, as well as to existing operators. Staff conduct site evaluations and water-quality surveys, and provide advice on culture methods. They also provide hatchery-reared finfish and shellfish for start-up operations. As well, a wide range of technical equipment is available on loan to assist aquaculturists in monitoring specific environmental conditions on-site. During the year, temperature recorders and current meters were moored, and plankton was monitored in some key areas.

For 1990, aquaculture operations reported total production sales of $5,432,740.

Shellfish Aquaculture Development

Staff at the Aquaculture Demonstration Centre in Ship Harbour continued to research and develop hatchery production techniques aimed at improving the breeding and growing of molluscs. During the year, they investigated hatchery and nursery methods, working with St. Francis Xavier University and the Department of Fisheries and Oceans on a salt-marsh-nursery study. They also studied broodstock management this year, paying particular attention to four broodstocks of native oysters and to improvements of oyster beds.

Staff also researched new marine species for possible application to aquaculture. During the year, seaweeds, marine worms, and cockles were studied. The Ship Harbour facility houses a quarantine section that enables staff to evaluate the aquaculture potential of non-native species. The quarantine may be used to introduce new broodstocks of European oysters, bay scallops, quahogs, and surf clams.

The division conducted field trials, which included testing the effects of 1990 and 1991 winter conditions on three shellfish species. A total of 20,000 native oysters, 25,000 bar clams, and 400,000 quahogs were produced at the hatchery for field trials and other projects.

Other activities included organizing seminars and workshops throughout the province to promote aquaculture development, and working with Environment Canada on a joint project to classify and evaluate shellfish growing areas.

During the year, approximately 1,500 people, as well as many group tours, visited the public display area at the Aquaculture Demonstration Centre.

Finfish Aquaculture Development

In providing extension services to finfish aquaculturists, department staff visited 65 sites between April and December 1990: 50 recreational ponds, 4 proposed commercial U-fish operations, and 11 proposed commercial grow-out sites.

Several emergency visits were made in response to fish health concerns, primarily during the summer.

Staff responded to several hundred inquiries for information on aquaculture. A resource library in Pictou loans materials to the aquaculture industry.

A monitoring program, using recording instruments, was initiated in July 1990 at five existing marine cage sites. Data is being compiled to give a profile of water temperature and current action for each site.

Staff analysed the water availability and phosphorous loadings at a number of existing freshwater aquaculture sites, as well as at possible sites, to determine the sites' maximum production potential for growing finfish.

Staff also reviewed the technical information on finfish aquaculture licence applications.

INLAND FISHERIES

Production and Distribution

Hatchery production has stabilized since the addition of the McGowan Lake facility in 1988. In an effort to serve the recreational fisheries throughout the province better, the two provincial hatcheries have been diversifying their products, with special emphasis being given to seatrout, brown trout, and a number of varieties of wild and hybrid brook trout.

Recreational Fisheries Management

A breakdown of departmental activities for the recreational fishery during the fiscal year 1990–91 is as follows:

A total of 424 lakes were stocked, an increase of 8 per cent over 1989. About 376,350 fish were placed in 220 lakes under the department's Urban Recreational Angling Program, while 503,350 fish were released in 204 lakes as part of the Wild Replenishment Program. The quantity of fish increased by 11 per cent, for a total of 879,692. About 31,800 rainbow trout were also stocked in provincial lakes. In addition, two landlocked salmon lakes were stocked this year, and the brown trout program was enlarged.

A breakdown of the stocking activity is as follows:

	Spring	Fall	1990 Total
Frasers Mills			
Speckled	147,468	194,020	341,488
Seatrout	114		114
Rainbow	31,800		31,800
Brown	5,500		5,500
McGowan Lake			
Speckled	187,540	313,250	500,790
Total			**879,692**

The division reared about 200,000 hybrid speckled trout swim-up fry (juveniles) in streamside incubation units to enhance trout populations in streams. This work was conducted in conjunction with local fish and game clubs, and the division expects to continue its collaborative efforts with these organizations.

In 1990, 46,000 catchable-sized trout were supplied to 30 fishing derbies. Such requests for sporting events are increasing, and it has become necessary to impose restrictions on the timing of the events. The trout used in the derbies are part of the Urban Recreational Angling Program, and the public is permitted to fish on these lakes at any time during the fishing season.

During the year, staff conducted a provincial-federal sports-fishing survey. Approximately 1,600 questionnaires were mailed to licensed anglers throughout the province. The results of this survey will provide valuable information on angler preferences, fishing efforts, catches in various counties, and expenditures.

Future plans include a study similar in scope to the smallmouth bass project to determine the present status and potential for enhancement of rainbow trout in the province. The department is co-operating with researchers at Dalhousie University who are conducting trout studies.

INDUSTRIAL DEVELOPMENT

The Industrial Development Division administers two major programs:

1) The Development Program

- provides cost-sharing incentives to the industry to upgrade fishing vessels, harbour infrastructure, shore-based facilities, and processing plants with proven technology;
- supports development and demonstration projects as a means of introducing new and improved technology to the industry;
- provides engineering services to other divisions of the department.

2) The Inspection Program

- administers the Fish Inspection and Fish Buyers Regulations.

The activities of the division are organized and conducted under the following program areas.

TECHNOLOGY DEVELOPMENT

Fishing Vessels and Gear

The department dedicated a considerable amount of time and resources to the development of a dogfish industry in Nova Scotia. A 45-foot vessel was chartered for two weeks to locate schools of large dogfish within fishing distance of Wedgeport and to test different types of fishing gear. This was not particularly successful because the dogfish appeared to have moved offshore. Those involved agreed that, although not conclusive, a dragger could be used for successfully catching dogfish.

In another part of the province, a longline fishing trial was organized to determine which type of line material and which hook design were most appropriate for fishing dogfish. Preliminary results indicated the gear was at least as good as conventional groundfish gear. Further testing will occur during the 1991–92 dogfish season.

Shore-Based Facilities

Technical staff continued to provide comprehensive guidelines and consultation services on construction practices for many of the shore-

based incentive programs, such as bait-freezing and storage facilities. On-site supervision by the division's engineers is often necessary, and they are assisted as required by engineering students hired under various employment programs.

Several projects focused on the processing sector of the industry. As previously mentioned, dogfish was a priority. An equipment demonstration project was organized to test various machines for processing dogfish. The equipment was rented for a four-month period and installed in a plant that was processing dogfish manually. Other interested processors were encouraged to visit the plant to observe the equipment in operation. This project succeeded in demonstrating that a mechanized dogfish line can produce a high volume of product. Orders were subsequently placed for some of the machines involved in the demonstration.

A second dogfish project examined the possibility of producing a salted, dried dogfish product without refrigeration. The work was conducted at the Canadian Institute of Fisheries Technology laboratory at the Technical University of Nova Scotia. Processing dogfish in this manner presents a unique problem caused by oxidation. Several anti-oxidants were tried in conjunction with various amounts of salt and different drying regimes. The results, however, were not satisfactory, and it was concluded that without refrigeration, it was not feasible to process salted, dried dogfish products.

Packaging was another area considered this year. A project was initiated to develop innovative packaging for the lobster industry. A test quantity of plastic trays, which could be used with a vacuum skin packaging system were manufactured. Preliminary trials revealed that the film wrapping material was not satisfactory. Although this new packaging technology has proved very successful on some food products, additional work must be done to adapt it to lobster products.

Fish Products and Processing

The department continued testing fish silage made from groundfish and herring waste, which was used as an agricultural fertilizer in the Centreville, Annapolis Valley, area. In the fall, fish silage, at 1,500 gallons per hectare, was applied on an experimental field and resulted in an above-average barley harvest, both in yield and protein levels, the following summer. No additional fertilizers were added during the growing season. Supplementary chemicals (triple phosphate), however,

were required for a comparable plot that had been treated with liquid pig manure and commercial fertilizers the previous fall. The harvest data obtained emphasizes the stability and release characteristics of fish silage products and the advantages associated with environmental concerns such as groundwater contamination.

A major program focused on processing rock crab and producing a viable seafood product for the marketplace. Efforts were aimed at developing efficient production processes for a broad range of minced, chunk, and various combination items. Future projects will study the possibility of enhancing shelf life of the products using pasteurization.

The division sponsored an in-plant demonstration of an Icelandic cod-head splitter. Designed to handle and split large heads up to seven pounds, the high-capacity machine increases yield by 5 per cent over manual cutting. Salted, split cod heads are easily sold to markets in southern Europe.

An experiment using proteolytic enzymes to tenderize surf clam parts produced encouraging results. Emphasis will be placed on developing value-added items with the tenderized product.

The prototype mussel decluster and grader designed by the department and the Technical University of Nova Scotia has generated strong interest from small-scale mussel operators. During the year, four units were built for the trade by Global Marine, Dartmouth.

The division completed design plans for a portable fish-smoking unit that can be used for various on-site demonstrations throughout the province. The machine can be used for hot or cold smoking and will help private processors evaluate the economic viability of smoking fish in their operations.

The division continued to investigate the possibilities of producing value-added seafood products through salting, deboning, smoking, and canning of species such as dogfish, groundfish, shellfish, and steelhead salmon.

FINANCIAL INCENTIVES

Harvesting

During the 1990–91 fiscal year, one program was funded under the harvesting sector for the purchase of insulated polyethylene fish containers for use on board open vessels. A total of 127 applicants received funding for 254 boxes, resulting in a total expenditure of $56,000.

Onshore Facilities

The department provided technical and financial assistance for the construction of various harbour infrastructure projects, aquaculture projects, and fisheries development projects.

Two programs were available to aquaculturists, fishermen, and fish-plant owners for the design and construction of private wharves and slipways.

The private wharf program include crib, pile, and floating wharves. This year, the latter was introduced for this time. A total of 19 wharves were designed and constructed with assistance from the department totalling $209,796.

The slipway program included timber slipways, concrete ramps, and marine railways. Eleven applicants were approved, and the projects were completed with $139,852 in provincial assistance.

Aquaculture development projects were cost-shared with two aquaculturists. A quahog development project utilizing onshore upwelling techniques in the Northumberland Shore area and a European oyster project to establish optimum growing conditions and sites on the eastern and southern shores of Nova Scotia received $68,776 in financial assistance from the department.

Fisheries development projects focusing on underutilized species received a total of $38,112 in departmental funding. Three species—blue shark, hagfish, and skate—were targeted, with emphasis on fishing methods, handling, processing, and marketing.

Processing

This program area addressed the issues of fish quality and operational efficiency as they pertain to processors, fishermen, and aquaculturists. Projects included refrigerated storage facilities and mussel-grading machines. Cost-sharing assistance of $175,000 helped 24 applicants.

Funding was provided for 15 bait/trawl freezing facilities. Written guidelines and technical assistance ensured that the buildings were constructed to proper standards.

FISHERIES INSPECTION SERVICE

The department is responsible for administering the Nova Scotia Fish Inspection Regulations. It is also responsible for enforcing the Nova Scotia Fish Buyers Regulations, as well as the Aquaculture Act and Regulations.

The Fisheries Inspection Service focuses on matters directly related to the health and safety of Nova Scotia seafood consumers. Of particular importance is shellfish, and the division performs various inspections on wild and cultivated shellfish around the province. In 1990–91, staff conducted more than 200 site inspections, which included beach and aquaculture site surveys, plant and retail outlets, and fish-buyer operations. The authority for the bulk of this work rests with the Nova Scotia Fish Inspection Regulations.

The department, through its inspection service, licensed 328 processing facilities and 378 fish buyers during the fiscal year. The moratorium on new licences for processing facilities and fish buyers, which was announced in March 1989, continued to be in effect, with the inspection service playing an integral role in its enforcement and administration.

The inspection service monitors the buying activities of the various fish plants and dealers around the province. Extensive fieldwork was completed on lobster-buying activities during the past fiscal year. This area is always contentious due to the highly competitive nature of the fishery. The authority for this work rests with the Nova Scotia Fish Buyers Regulations.

The inspection service also conducts site assessments on aquaculture operations to ensure compliance with the Aquaculture Act

and Regulations. Concerns focus on the property rights of the applicant, as well as on health and safety issues arising from the type of production. In 1990–91, more than 100 site inspections were completed by the service.

The inspection service has a staff of three permanent inspectors supplemented by three to four seasonal field-sampling technicians who work in conjunction with the Department of Fisheries and Oceans, Nova Scotia Department of Health and Fitness, Nova Scotia Department of Environment, and other regulatory agencies.

Canada–Nova Scotia Co-operation Agreement on Fisheries Development

The Co-operation Agreement on Fisheries Development was signed on July 6, 1990. The agreement had a total value of $13.2 million over four years, expiring on March 31, 1994. Federal and provincial contributions are $7.2 million and $6.0 million respectively. The program and budget structure is as follows:

Sector	Four-Year Budget (Millions of Dollars)	
	Federal	Provincial
Resource Base Enhancement	1.7	1.6
Commercial Fishing Fleet Management Innovations	1.3	—
Technology Upgrading and Innovation	0.5	1.4
Ocean Production Enhancement Network	2.4	2.8
Native Fisheries Development	0.3	—
Program Implementation	1.0	0.2
Total	**7.2**	**6.0**

The funds under this agreement have the following objectives: to enhance the fisheries resource base, seafood production, and markets; to further develop existing products and markets and to increase their competitiveness; to upgrade existing and new development technologies; and to upgrade the skills of people in the industry.

Although the agreement was signed in July 1990, it took several months to arrange operational details and obtain approval for funding. Consequently, only two projects were undertaken, with a total expenditure of $12,000. These projects were:

Sector 1—Sports-fishing survey

Sector 3—Production of a new mussel pamphlet

It is expected that all programs will be funded at a higher level next year.

MARKETING

The Marketing Division provides a wide range of services to the fishing industry, the seafood retail sector, the food-service industry, and the general public. The division offers support services aimed at promoting seafood sales in local, national, and international markets.

MARKET DEVELOPMENT AND PROMOTION

General

The division provides comprehensive and timely information to the Nova Scotia fishing industry on opportunities in seafood markets around the world. It also provides international buyers with information on Nova Scotia seafood exporters and products. The Marketing staff work with the fishing industry to promote Nova Scotia seafood within and outside the province. During the fiscal 1990–91 year, the division responded to 1,200 requests for information on seafood suppliers and products.

Trade Issues

Staff provided advice and background papers on issues concerning Europe '92, a conference on the harmonization of fisheries inspection and Multi-level Trade Negotiations (MTN). They collaborated with other provincial departments in preparing position papers. The division also monitored developments in trade actions by the United States against seafood products, and regulatory changes related to customs and inspections.

Seafood Publications

New consumer promotional materials were developed for June—Seafood Month. These, together with other promotional materials, were distributed to consumers, educators, retailers, and food-service operators throughout Canada and the United States. The materials are supplied to Nova Scotia seafood retailers and wholesalers to support their sales efforts. About 225,000 pieces of promotional literature were distributed.

A postcard was printed, highlighting the quality of Nova Scotia lobster by focusing on the clean waters where they are fished.

The *Directory of Nova Scotia Fish Products* is updated every second year and reprinted in alternate years. The directory is a buyer's

guide to seafood produced in the province and is distributed internationally. Two thousand directories were distributed to members of the seafood trade through overseas Canadian offices, as well as 38 38through trade shows and by direct mailings.

Seafood Trade Shows

The Marketing Division participated in three seafood shows in the United States: the Boston Seafood Show, Sea Fare in Los Angeles, and the New York Seafood Show. The Nova Scotia booth provided information on the quality and types of seafood produced in the province and on suppliers of these products. The Boston Seafood Show continues to be the most important event, traditionally attracting a large number of Nova Scotia exhibitors. The division also organized a seafood exhibit at SIAL, a leading food show in Paris.

Seafood consultants with the division assisted Nova Scotia exhibitors in designing and setting up their booths. They also provided samplings of Nova Scotia seafood products.

Promotions—In Province

The division conducted seafood-cooking demonstrations at exhibitions, shopping malls, and consumer shows, including the Pictou Lobster Carnival, Seafest in Yarmouth, and Scallop Days in Digby. These promotions are aimed at increasing consumer awareness of Nova Scotia seafood. For the second consecutive year, staff promoted underutilized species through a summer barbecue program.

The division also conducted workshops for food-service and institutional staff, as well as for major supermarket chains planning to expand their seafood-merchandising operations.

June—Seafood Month

June was chosen for special promotional activities because seafood is readily available and reasonably priced at this time of the year. Retailers and food-service operators favour the summer for featuring seafood.

This year's campaign featured June Sweepstakes. The June promotion continues as a joint Maritime effort, with the three provinces combining funds and staff to increase seafood consumption.

FINANCE AND ADMINISTRATION

This division provides administrative support to the department, including financial, personnel, and office services. Planning, economic, statistical, data-processing, and communication services are also provided as required.

COMMUNICATION SERVICES

The division, through its Communication and Public/Media Relations Services, is responsible for the development, publication, and distribution of the department's annual report and of educational and promotional material. It is also involved in the preparation and distribution of news releases and media stories and in the organization of media and promotional events. The division also co-ordinates departmental participation at fisheries exhibitions and trade shows.

Public/Media Relations

During 1990, Communication Services distributed about 300 information packages containing printed and audio-visual material on the commercial and recreational fisheries. While information requests came from across Canada and from abroad, many inquiries were from provincial libraries, teachers, and students enrolled in the Maritime Studies Program.

Some of the major projects undertaken by the Public/Media Relations Services during the 1990–91 fiscal year included:

- collaboration with the Marketing Division on promotions for June—Seafood Month, which received broad media coverage in Nova Scotia;
- co-ordination of the official opening of Frasers Mills Fish Hatchery, Antigonish County, in September 1990;
- participation on the Gulf of Maine Public Education and Participation Committee, which is working in collaboration with the Gulf of Maine Council on the Marine Environment to enhance public awareness of the Gulf of Maine and its resources.

Fisheries Exhibitions

Communication Services organized the department's participation at the annual Nova Scotia Fisheries Exhibition in Lunenburg and at the Eastern Canadian Fisheries Exposition in Yarmouth.

Publications

The following publications were completed by Communication Services during 1990–91:

- *Sensitive Habitats: Estuaries and Salt Marshes* was published, completing the four-booklet series on sensitive habitats.
- a brochure on the Frasers Mills Fish Hatchery.
- *Fisheries Handbook* and a brochure on the Canada–Nova Scotia Co-operation Agreement on Fisheries Development were produced jointly by the Nova Scotia Department of Fisheries and the federal Department of Fisheries and Oceans.

ADMINISTRATIVE INFORMATION AND CONTROL SYSTEMS

During the fiscal 1990–91 year, new computer hardware was acquired for the Aquaculture Management System to permit Geographical Information System software to be used in conjunction with the aquaculture database. The existing hardware was transferred to the Marine Resources Division to permit the statistical analysis of biological data and to provide a word-processing function.

Minor alterations and enhancements continue to be made to the Fisheries Loans System. Efforts during the fiscal year have been successful in keeping monthly charges from the Department of Government Services at existing levels while permitting improvements, maintaining integrity of the database, and retaining the flexibility of the system.

During the year, efforts were directed at the development of a departmental policy for microcomputers. This policy, while including some provisions contained in a draft policy developed by the Department of Government Services, reflected the requirements and practices of this department.

With data input completed, the Fish Buyers and Fish Plant Licensing System was given its first thorough workout through the production of

licence renewal notices and licences. The minor problems encountered were overcome. This exercise provided significant savings in time and financial resources.

The department, in response to a need for better data protection, acquired a special vault to protect both original software media and data back-up media. Because most data media in use will be destroyed at about 125°F (45°C), the vault will provide protection for diskettes and computer tape media.

WEATHERADIO CANADA

The department continued to provide 50 per cent cost-sharing with Environment Canada to fund a highly successful series of VHF repeater stations in Nova Scotia and Prince Edward Island that disseminate marine and public weather information to fishermen and the general public.

STATISTICAL REVIEW

Fisheries production statistics, as provided here for the calendar year 1990, are revised figures supplied by the federal Department of Fisheries and Oceans. They may be subject to minor adjustments as late returns from firms and individuals are received and processed by that department.

TABLE I

Major Species Landings Yielding More Than $1 Million Annually

Species	Landings (Metric Tons)		Value ($,000)	
	1990	1989	1990	1989
1. Lobster	22,436	19,086	134,623	138,884
2. Cod	113,168	122,958	87,356	77,997
3. Scallops	69,356	79,963	71,960	79,268
4. Haddock	20,187	22,283	23,305	23,972
5. Pollock	35,638	39,890	18,998	18,206
6. Herring	111,889	84,214	16,026	12,360
7. Flounder	16,019	14,141	15,621	14,177
8. Shrimp	3,996	4,946	12,503	12,572
9. Clams	10,627	10,132	9,923	7,478
10. Halibut	1,810	1,882	8,875	8,736
11. Redfish	25,999	31,313	8,084	9,437
12. Crab	3,300	2,884	7,654	5,348
13. Hake	10,764	10,323	6,236	5,287
14. Swordfish	909	1,239	5,253	7,216
15. Tuna	318	517	5,047	5,890
16. Mackerel	9,200	5,229	2,935	1,683
17. Cusk	3,540	3,402	2,217	1,836
18. Monkfish	2,293	1,775	1,967	1,456
19. Squid	1,139	58	1,684	21
20. Seaweeds	24,883	28,025	1,885	2,459
21. Alewives	2,806	5,019	1,142	2,573

TABLE II

Nova Scotia Fisheries
Landed and Market Value
1960–1990

Year	Landed Value ($,000)	Market Value ($,000)
1960	26,094	51,753
1965	49,371	93,443
1970	55,652	105,939
1975	91,010	208,574
1980	230,911	438,799
1981	263,727	484,182
1982	259,411	523,191
1983	276,451	497,664
1984	265,335	533,500
1985	312,733	562,919
1986	423,973	805,548
1987	524,147	995,800
1988	439,082	834,255
1989	438,426	833,009
1990	444,864	845,241[a]

[a]This is an estimate based on recent average past relationships between landed and market values.

TABLE III

Nova Scotia Fisheries
Landings and Landed Value
by Species Group

	Landings (Metric Tons)		Value ($,000)	
Group	**1990**	**1989**	**1990**	**1989**
Groundfish	231,312	249,708	173,284	161,781
Pelagic & Estuarine	126,429	96,647	30,964	30,129
Molluscs & Crustaceans	110,938	117,197	238,544	243,901
Miscellaneous	24,982	28,159	2,072	2,615
Total	**493,661**	**491,711**	**444,864**	**438,426**

TABLE IV

Landed Value of Fisheries by County

County[a]	Landed Value[b] ($,000)		Change (Per Cent)
	1990	1989	1989–90
Shelburne	96,773	83,061	+17
Yarmouth	74,705	62,877	+19
Lunenburg	67,294	67,549	0
Digby	45,468	52,880	-14
Cape Breton	41,132	40,538	-1
Guysborough	28,394	36,518	-22
Halifax	27,426	25,390	+8
Inverness	18,634	18,470	+1
Queens	10,372	8,829	+17
Victoria	9,854	11,046	-11
Richmond	7,045	8,222	-14
Pictou	6,843	7,865	-13
Antigonish	3,739	5,316	-30
Cumberland	3,515	4,620	-23
Annapolis	1,454	1,854	-22
Colchester	1,368	1,220	+12
Kings	695	2,072	-66
Hants	149	99	+51
Total	**444,860**	**436,426**	**+1**

[a]Counties are in order of the 1990 landed value.

[b]Landed value includes groundfish, pelagic and estuarine, molluscs and crustaceans, viscera, seaweeds, and other.

TABLE V

Total Landed Weight of Fisheries by County

County[a]	Landed Weight[b] (Metric Tons)		Change (Per Cent)
	1990	1989	1989–90
Yarmouth	91,763	79,798	+15
Lunenburg	87,556	90,188	-3
Shelburne	71,990	66,431	+8
Digby	56,918	55,830	+2
Cape Breton	47,915	50,977	-6
Guysborough	47,873	61,930	-23
Halifax	21,966	19,800	+11
Inverness	19,515	20,037	-3
Richmond	11,845	14,852	-20
Pictou	11,744	5,531	+112
Queens	8,818	7,912	+11
Victoria	7,168	8,013	-11
Antigonish	3,179	1,996	+59
Annapolis	1,707	3,609	-52
Cumberland	1,686	1,545	+1
Colchester	1,084	915	+18
Kings	669	2,245	-70
Hants	265	102	+160
Total	**493,661**	**491,711**	**0**

[a]Counties are in order of the 1990 landed weight.

[b]Landed weight includes groundfish, pelagic and estuarine, molluscs and crustaceans, viscera, seaweeds, and other.

TABLE VI

Landed Weight and Landed Value of Fisheries by Species Group by County

County	Species Group	Landed Weight (Metric Tons)		Landed Value ($,000)	
		1990	1989	1990	1989
Annapolis	Groundfish	213	102	195	92
	Pelagic[a]	358	2	48	—
	Shellfish[b]	542	1,013	1,174	1,616
	Other[c]	594	2,492	37	146
Antigonish	Groundfish	1,266	979	585	436
	Pelagic	1,109	328	306	1,183
	Shellfish	804	689	2,848	3,697
	Other	—	—	—	—
Cape Breton	Groundfish	33,084	42,681	19,253	22,266
	Pelagic	6,012	2,405	1,205	526
	Shellfish	8,819	5,889	20,663	17,736
	Other	—	3	11	11
Colchester	Groundfish	11	10	15	11
	Pelagic	64	38	48	25
	Shellfish	1,009	867	1,305	1,184
	Other	—	—	—	—
Cumberland	Groundfish	170	17	92	10
	Pelagic	135	267	65	98
	Shellfish	1,381	1,261	3,358	4,512
	Other	—	—	—	—

[a] "Pelagic" includes pelagic and estuarine.

[b] "Shellfish" includes molluscs and crustaceans.

[c] "Other" includes livers, tongues, scales, roe and oil, sea plants, mammals, and worms.

County	Species Group	Landed Weight (Metric Tons)		Landed Value ($,000)	
		1990	1989	1990	1989
Digby	Groundfish	14,530	10,320	13,057	8,572
	Pelagic	20,260	9,341	2,993	1,539
	Shellfish	21,200	34,567	29,370	42,661
	Other	928	1,602	48	108
Guysborough	Groundfish	23,035	41,471	12,788	19,440
	Pelagic	17,781	10,315	3,353	1,599
	Shellfish	7,037	10,144	12,242	15,479
	Other	10	—	11	—
Halifax	Groundfish	16,613	16,032	16,882	16,055
	Pelagic	3,705	1,649	2,647	2,271
	Shellfish	1,648	2,119	7,897	7,064
	Other	—	—	—	—
Hants	Groundfish	6	6	7	7
	Pelagic	257	90	140	86
	Shellfish	2	6	2	6
	Other	—	—	—	—
Inverness	Groundfish	14,844	14,975	8,719	7,548
	Pelagic	1,467	1,912	668	969
	Shellfish	3,204	3,150	9,247	9,953
	Other	—	—	—	—
Kings	Groundfish	92	135	125	182
	Pelagic	503	1,965	208	1,352
	Shellfish	73	143	357	532
	Other	1	2	5	6
Lunenburg	Groundfish	47,515	50,403	24,667	26,150
	Pelagic	1,579	1,833	442	487
	Shellfish	38,462	37,952	42,185	40,908
	Other	—	—	—	4

County	Species Group	Landed Weight (Metric Tons)		Landed Value ($,000)	
		1990	1989	1990	1989
Pictou	Groundfish	237	133	96	60
	Pelagic	9,839	3,466	1,384	428
	Shellfish	1,439	1,443	5,313	7,291
	Other	229	489	50	86
Queens	Groundfish	4,756	4,803	3,536	3,421
	Pelagic	340	181	157	78
	Shellfish	3,722	2,928	6,679	5,330
	Other	—	—	—	—
Richmond	Groundfish	10,882	14,219	4,552	5,842
	Pelagic	379	178	142	52
	Shellfish	584	455	2,351	2,328
	Other	—	—	—	—
Shelburne	Groundfish	43,481	38,087	49,284	39,224
	Pelagic	8,913	9,415	7,531	9,570
	Shellfish	5,510	3,954	38,833	32,849
	Other	14,086	14,975	1,125	1,418
Victoria	Groundfish	3,495	4,370	2,567	2,961
	Pelagic	1,967	1,975	572	514
	Shellfish	1,706	1,668	6,715	7,570
	Other	—	—	—	—
Yarmouth	Groundfish	17,082	10,966	16,862	9,505
	Pelagic	51,751	51,287	9,054	9,351
	Shellfish	13,796	8,949	48,004	43,185
	Other	9,134	8,596	785	836

TABLE VII

Comparative Landings and Landed Value Among Selected Provinces in Order of Landed Value—1990

Province	Landed Weight (Metric Tons)	Landed Value ($,000)
Nova Scotia	493,661	444,864
British Columbia	285,127	411,951
Newfoundland	516,932	279,516
New Brunswick	155,594	91,929
Quebec	74,330	74,140
Prince Edward Island	65,196	48,485
Canada	1,594,498	1,432,889

TABLE VIII

Nova Scotia Fishery Profile

Employment

Fishermen	15,521
Plant Workers	11,000[a]
Registered Fish Processing Establishments	333

[a]Plant workers statistics are for 1989 and are taken from the *Manufacturers' Directory*, Nova Scotia Department of Industry Trade and Technology.

**The Nova Scotia Fishing Fleet—
by Size and Vessel Categories (1990–91)**

Inshore Fleet (Length/ft)	**Number of Boats**
Less than 20'	930
20'–25'	402
25'–30' & 30'–35'	582 & 1,042
35'–40'	1,026
40'–45'	798
Total	**4,780**
Nearshore Fleet (Length/ft)	
45'–50'	28
50'–55'	23
55'–60'	44
60' -65'	124
Total	**219**
Offshore Fleet (Length/ft)	
65'–90'	7
90'–100'	25
100'–125'	48
125'–150'	21
150'+	23
Total	**124**
Total of Boats All Sizes	**5,123**

TABLE IX

Ordinary Expenditures

Fiscal Year Ending March 31	Total Ordinary Expenditure
1965	$ 230,787
1966	340,653
1967	321,742
1968	530,166
1969	412,577
1970	458,034
1971	1,020,778
1972	1,373,784
1973	908,457
1974	3,138,359[a]
1975	1,088,534
1976	661,763
1977	2,350,456
1978	3,149,131
1979	5,377,213
1980	5,841,649
1981	11,047,135[b]
1982	13,758,223
1983	12,642,688
1984	10,891,506
1985	11,496,630
1986	9,482,968
1987	7,964,297
1988	8,926,000
1989	9,207,436
1990	6,665,026[c]
1991	7,446,000

[a]More than $2 million was spent in the form of special assistance to help the industry recover from a storm in June 1973.

[b]Beginning in 1981, capital advance interest charges for the Fisheries Loan Board are included in the Department of Fisheries estimates. The charges were previously accounted for under Department of Finance estimates.

[c]For the fiscal year 1990–91, interest charges are not reflected in Total Ordinary Expenditures.

TABLE X

Nova Scotia Landings Profile 1990

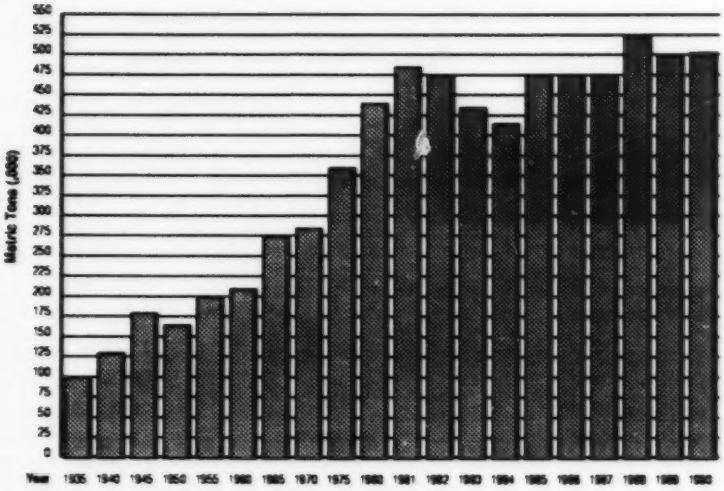
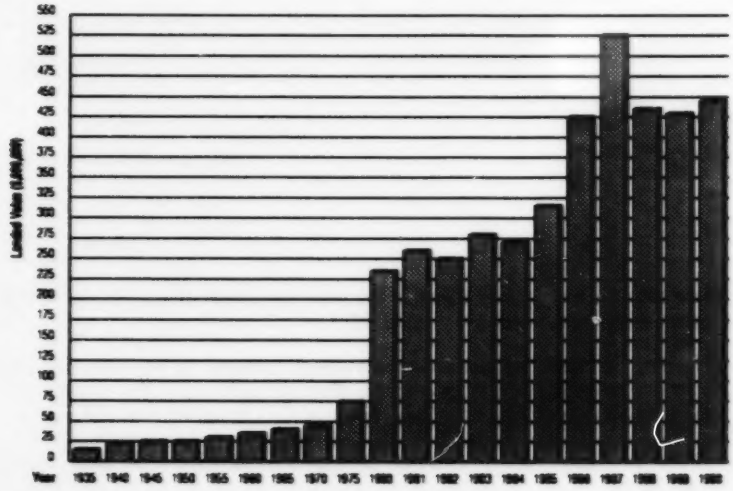


TABLE XI

Nova Scotia Landed Value Profile 1990



DEPARTMENT OF FISHERIES

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Deputy Minister	Mr. D.A. (Sandy) MacLean	Halifax
Secretary to the Deputy Minister	Miss Mary Evans	Halifax

Finance and Administration Division

Director	Mr. John Marsters	Halifax
Supervisor, Administration Services	Mr. Charles Allen	Halifax
Personnel/Payroll Clerk	Mrs. Marilyn Friis	Halifax
Accounting Clerk	Mrs. Nancy Wallace	Halifax
Clerk	Miss Sandy Kane	Halifax
Clerk Receptionist	Mrs. Michelle Chisholm	Halifax
Supply Technician	Mr. Frank MacKay	Pictou
Public Information Officer	Ms. Diane Kenny	Halifax
Computer Services Officer	Mr. Ken Weston	Halifax

Marketing Division

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Secretary to the Director	Ms. Judy Ganner	Halifax
Seafood Consultant	Mrs. Estelle Bryant	Halifax
Home Economist	Ms. Ellen O'Reilly	Halifax

Marine Resources Division

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Advisor, Marine Resources (Crustaceans)	Mr. Greg Roach	Halifax
Advisor, Marine Resources (Groundfish/Plants)	Mr. Clarrie MacKinnon	Halifax
Advisor, Marine Resources (Pelagic)	Dr. Bob Crawford	Antigonish

Aquaculture and Inland Fisheries

Director	Mr. Linc MacLeod	Pictou
Secretary to the Director	Mrs. Debra Langille	Pictou
Assistant Director	Mr. Murray Hill	Pictou
Biologist	Ms. Nancy Adams	Pictou
Fisheries Technician	Mr. Al MacNeil	Pictou
Aquaculture Co-ordinator	Dr. Catherine Enright	Halifax
Aquaculture Administrator	Ms. Marilyn O'Neil	Halifax
Legal Services Technician	Ms. Monique Pelletier	Halifax
Clerk	Mrs. Marion Vezina	Halifax
Hatchery Manager	Mr. Andrew Bagnall	Ship Harbour
Maintenance Worker	Mr. Ray Truen	Ship Harbour
Hatchery Manager	Mr. Don MacLean	Frasers Mills
Fisheries Technician	Mr. Jim MacDonald	Frasers Mills
Hatchery Technician	Mr. Darryl Murrant	Frasers Mills
Hatchery Technician	Mr. Frank MacDonald	Frasers Mills
Hatchery Manager	Mr. Mike McNeil	McGowan Lake
Hatchery Technician	Ms. Carolyn Holdright	McGowan Lake
Hatchery Technician	Mr. Bill Whitman	McGowan Lake

Industrial Development Division

Director	Mr. George Richard	Halifax
Secretary to the Director	Mrs. Audrey Gay	Halifax
Program Administrative Officer	Mr. Dave Hansen	Halifax
Incentive Programs Assistant	Ms. Linda Riles	Halifax
Fisheries Inspector	Ms. Mary Meagher	Halifax
Fisheries Inspector	Mr. Dana Rodgers	Halifax
Fisheries Inspector	Mr. Tom LeBlanc	Pictou
Fisheries Technician	Mr. Ole Egilsson	Pictou
Supervisor, Plants and Facilities	Mr. Gary Scott	Halifax
Construction Supervisor	Mr. Bill MacDonald	Halifax
Port Facilities Engineer	Mr. Marshall Giles	Halifax
Supervisor, Product Technology	Mr. Mike Drebot	Halifax

Fisheries Loan Board

Executive Director	Mr. John Marsters	Halifax
Manager, Fisheries Loans	Mr. Mack MacIntosh	Halifax
Secretary	Miss Nancy Corkum	Halifax
Clerk Typist	Mrs. Rita Jardine	Halifax
Chief Accountant	Mr. Mac Everett	Halifax
Accounting and Insurance Clerk	Mrs. Linda Fraser	Halifax

Accounting Clerk	Mrs. Barb Tribble	Halifax
Senior Loans Officer	Mr. Jim Sarty	Halifax
Loans Officer	Mr. Bruce Cox	Halifax
Loans Officer	Ms. Lorraine Provender	Halifax
Engineer	Mr. Mike Myketyn	Halifax
Fishing Vessel Inspector	Mr. Bernard Stockley	Halifax
Fishing Vessel Inspector	Mr. Bill Buffett	Halifax
Fishing Vessel Inspector	Mr. Tom Prewett	Halifax
Loans Administrator	Mr. Sonny Pellerin	Halifax

Training and Field Service

Training

Director	Mr. Jim McLevey	Halifax
Secretary to the Director	Mrs. Barbara O'Brien	Halifax
Supervisor, Fisheries Training Centre	Mr. Don Robertson	Pictou
Chief Clerk	Mrs. Marjorie O'Toole	Pictou
Instructor (Navigation)	Mr. Greg MacNeil	Pictou
Instructor (Navigation/MED)	Mr. Brad MacCallum	Pictou
Instructor (Engines/MED)	Mr. Bill Grant	Pictou
Instructor (Engines)	Mr. Ira Grant	Pictou
Instructor (Engines)	Mr. Gilles Gauthier	Pictou
Instructor (Business/MED)	Miss Beulah Wright	Pictou
Instructor (Nets and Gear)	Mr. Allan Tobey	Pictou
Maintenance Worker	Mr. Ed Dalton	Pictou
Chief Cook	Mrs. Alexina MacKay	Pictou
Housekeeping Aid	Mrs. Lois Betts	Pictou

Field Service

Supervisor, Field Operations	Mr. Cecil Rankin	Pictou
Fisheries Representative	Mr. Adolphe Kehoe	Petit-de-Grat
Fisheries Representative	Mr. John McInnes	Port Hood
Fisheries Representative	Mr. Gerald Boudreau	Little Dover
Supervisor, Field Operations	Mr. Gerry Mossman	Rose Bay
Fisheries Representative	Mr. Gabriel d'Entremont	Clarks Harbour
Fisheries Representative	Mr. Arnold Muise	Middle West Pubnico
Fisheries Representative	Mr. Richard McDormand	Granville Ferry